

FIG. 1

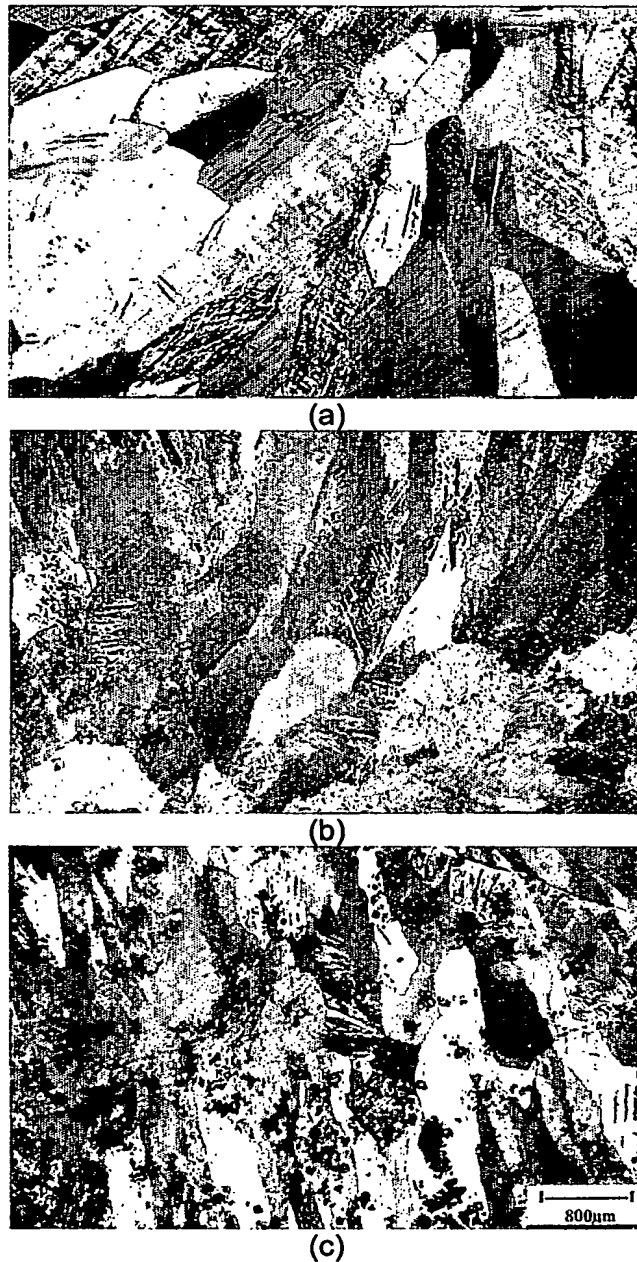


Figure 1 Optical micrographs showing the grain refining ability of as-received sponge when added to pure magnesium at 730 °C. All micrographs are of the same magnification. (a) Pure magnesium, (b) after adding 1% sponge, followed by 30 minutes manual stirring, and (c) adding a further 1% sponge and applying 30 minutes manual stirring.

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FIG 2

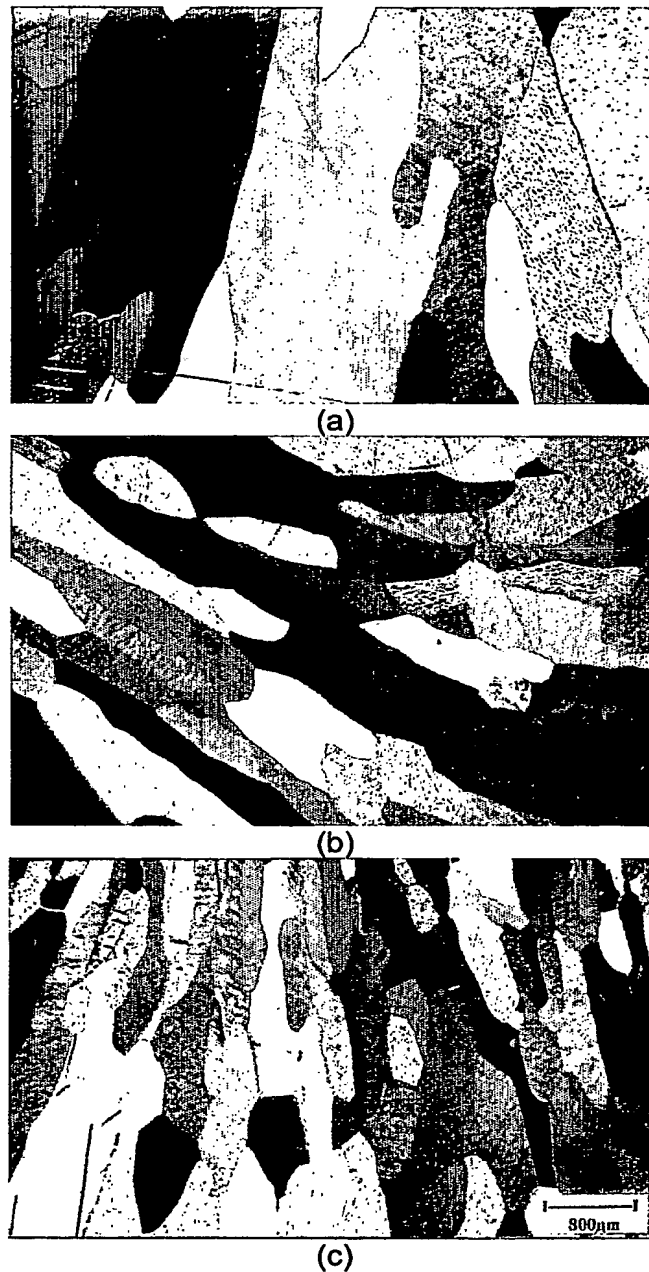


Figure 2 Optical micrographs showing the grain refining ability of as-received sponge when added to pure magnesium at 780 °C. All micrographs are of the same magnification. (a) Pure magnesium, (b) after adding 1% sponge, followed by two minutes manual stirring and then 30 minutes holding at temperature, and (c) a further holding of 210 minutes at temperature.

FIG 3

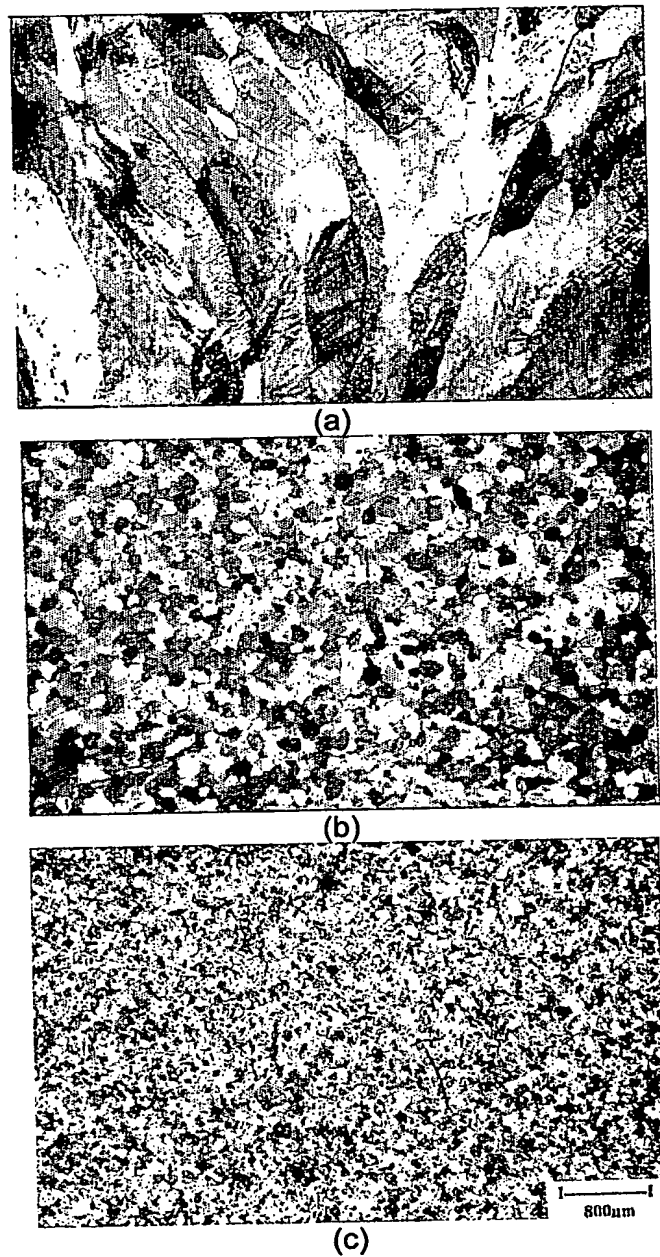


Figure 3 Optical micrographs showing the grain refining ability of pretreated sponge when added to pure magnesium at 680 °C. All micrographs are of the same magnification. (a) Pure magnesium, (b) after adding 1 wt% sponge, followed by 20 minutes manual stirring, and (c) after a further 10 minutes stirring.

FIG 4

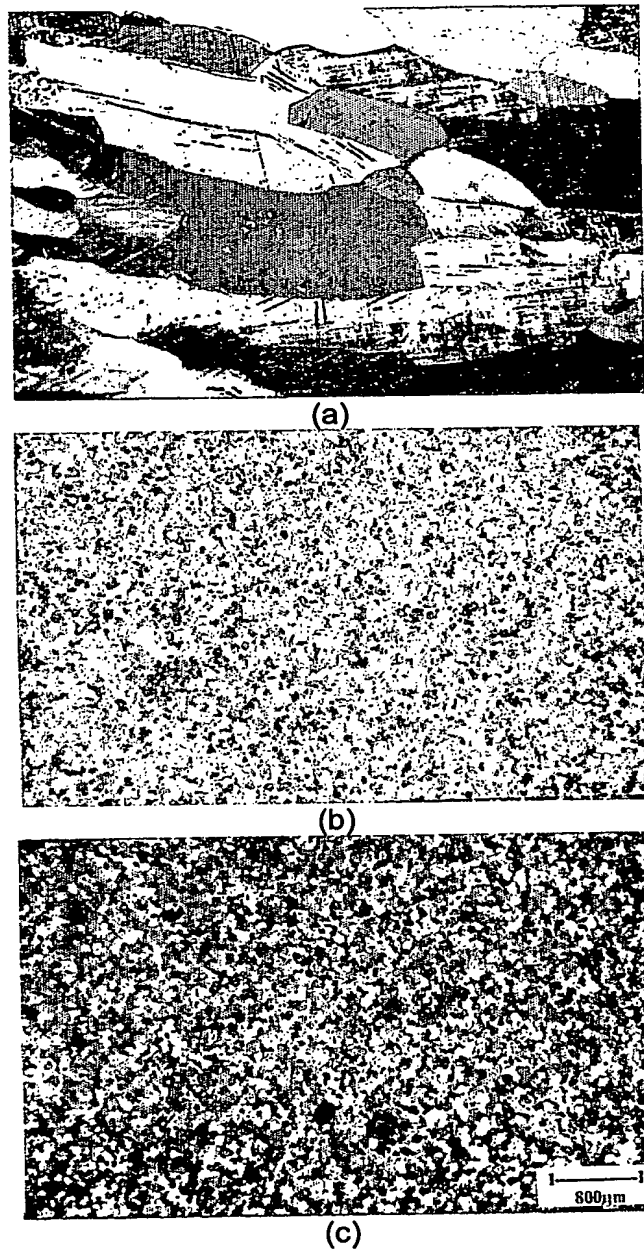


Figure 4 Optical micrographs showing the grain refining ability of pretreated sponge when added to pure magnesium at 730 °C. All micrographs are of the same magnification. (a) Pure magnesium, (b) after adding 1 wt% sponge, followed by 30 minutes manual stirring, and (c) after 30 minutes of holding following (b) and then restirring the melt for two minutes.

FIG 5

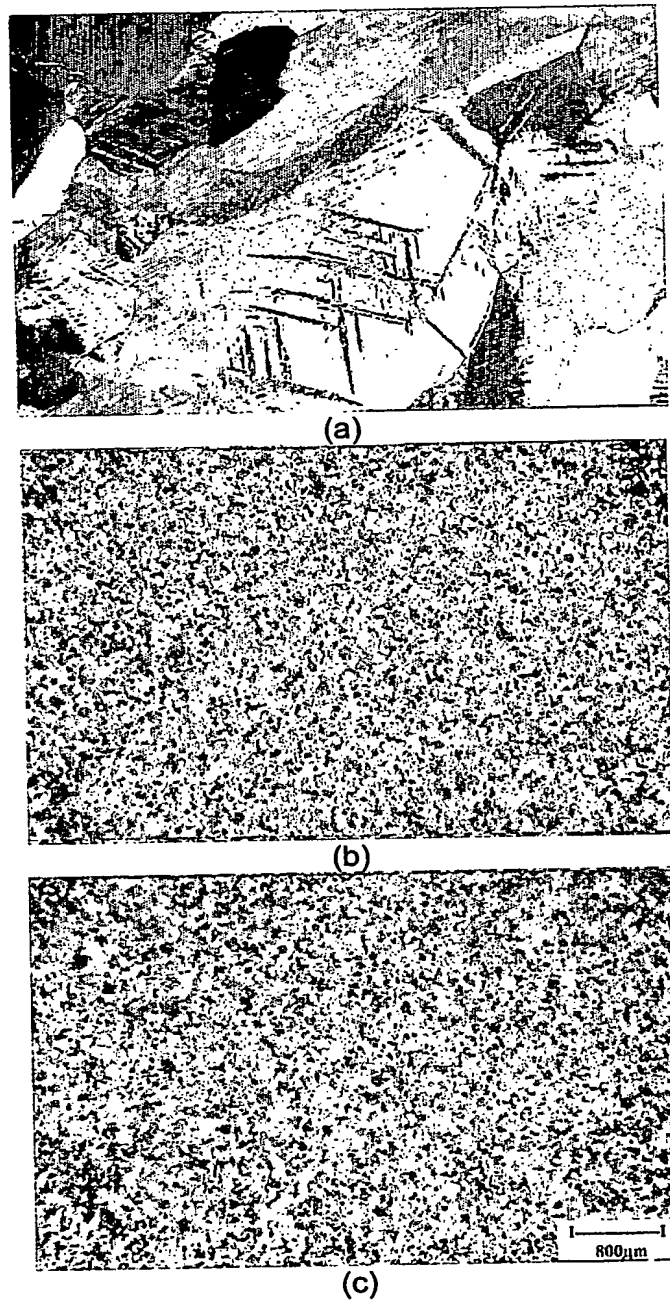


Figure 5 Optical micrographs showing the grain refining ability of pretreated sponge when added to pure magnesium at 800 °C. All micrographs are of the same magnification. (a) Pure magnesium, (b) after adding 1 wt% sponge, followed by 30 minutes manual stirring, and (c) after 30 minutes of holding following (b) and then restirring the melt for two minutes.

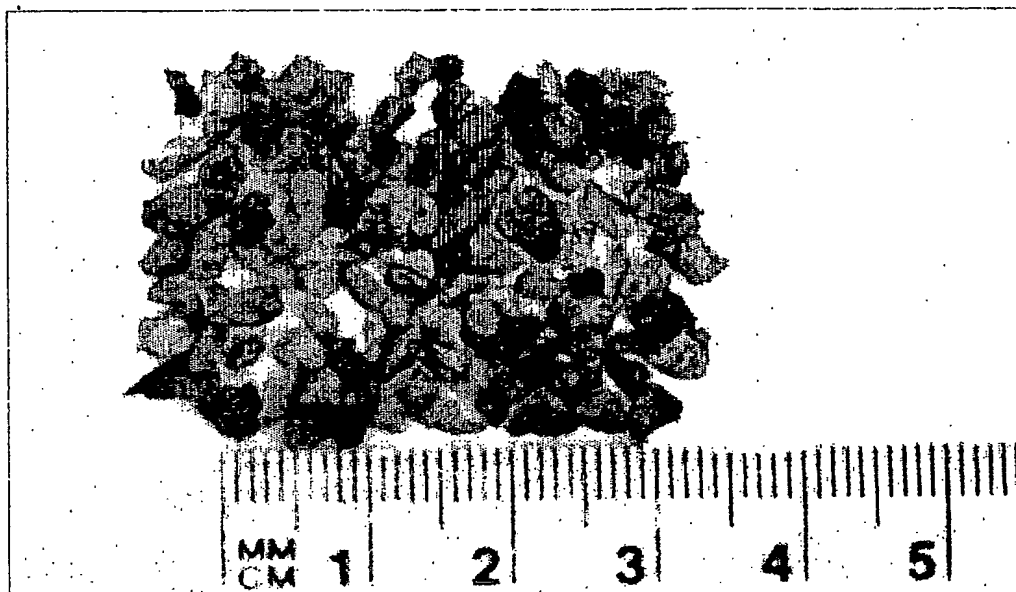


Fig. 6

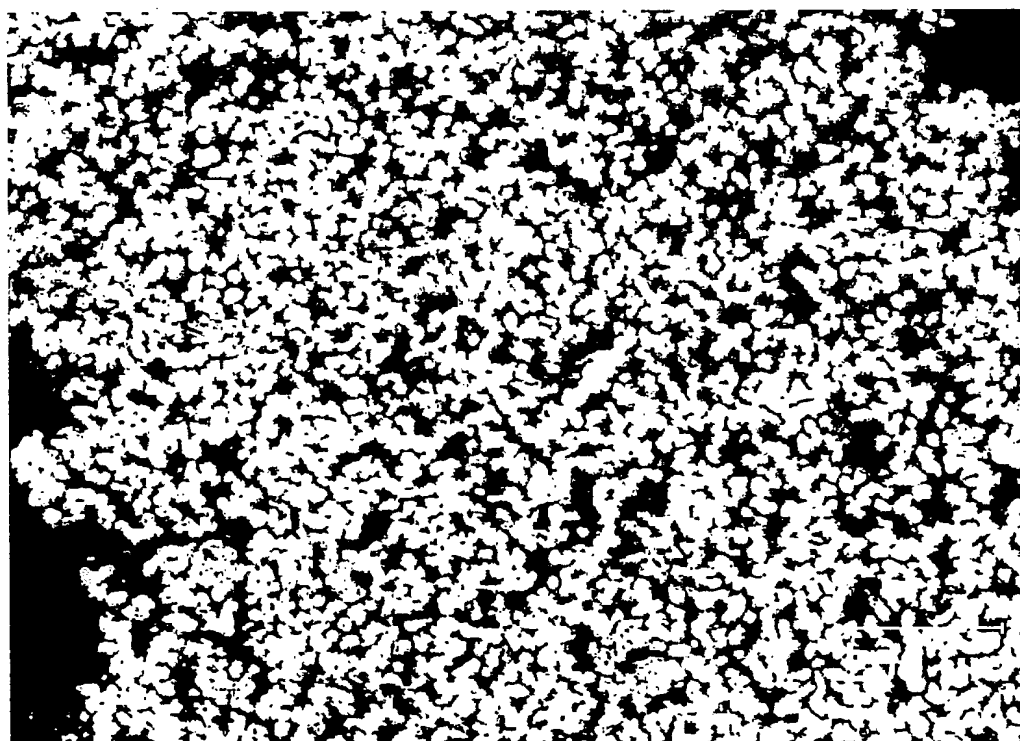


Fig. 7

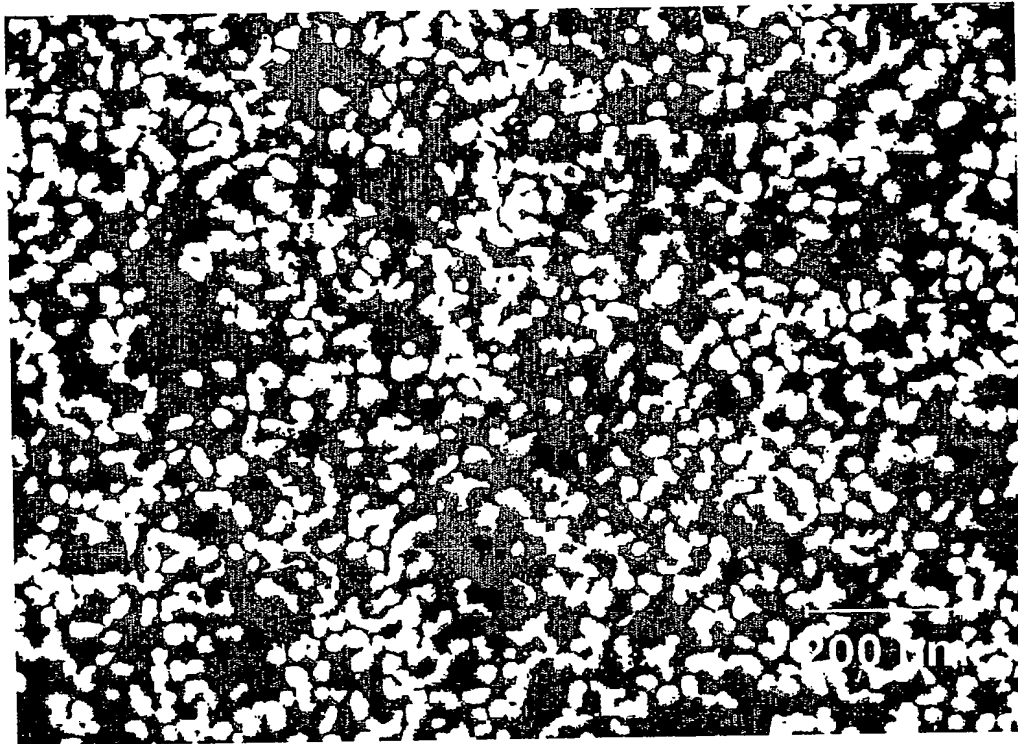


Fig. 8

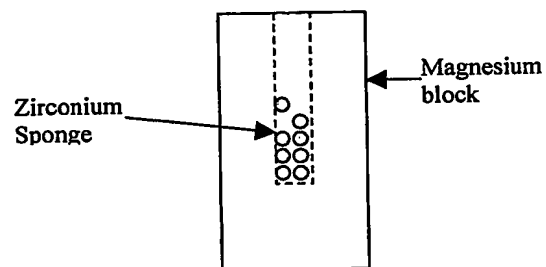
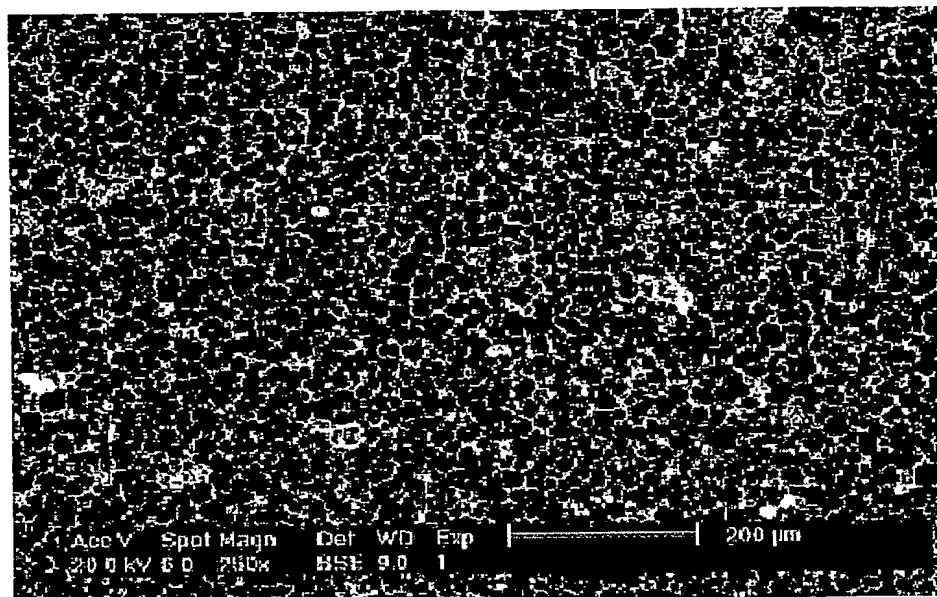
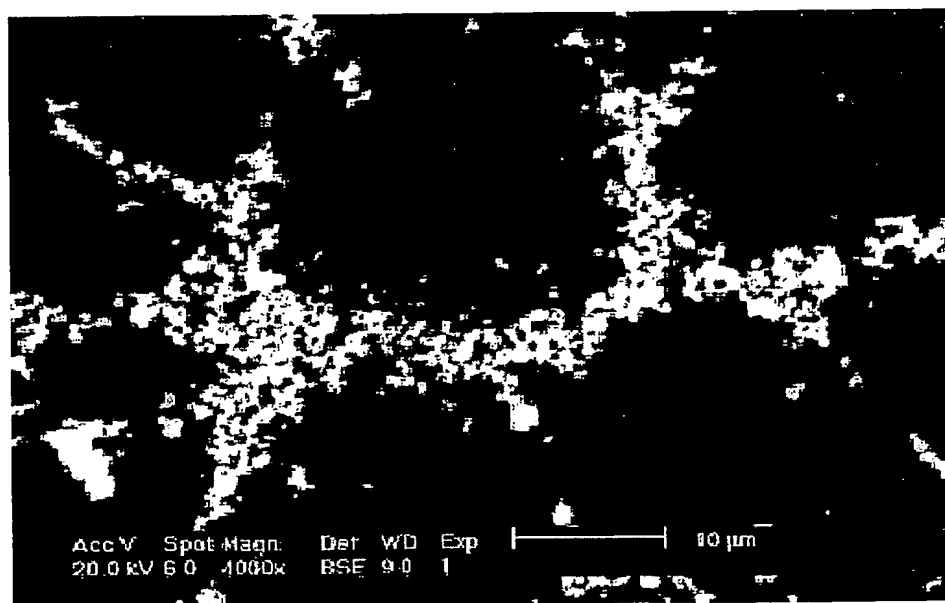
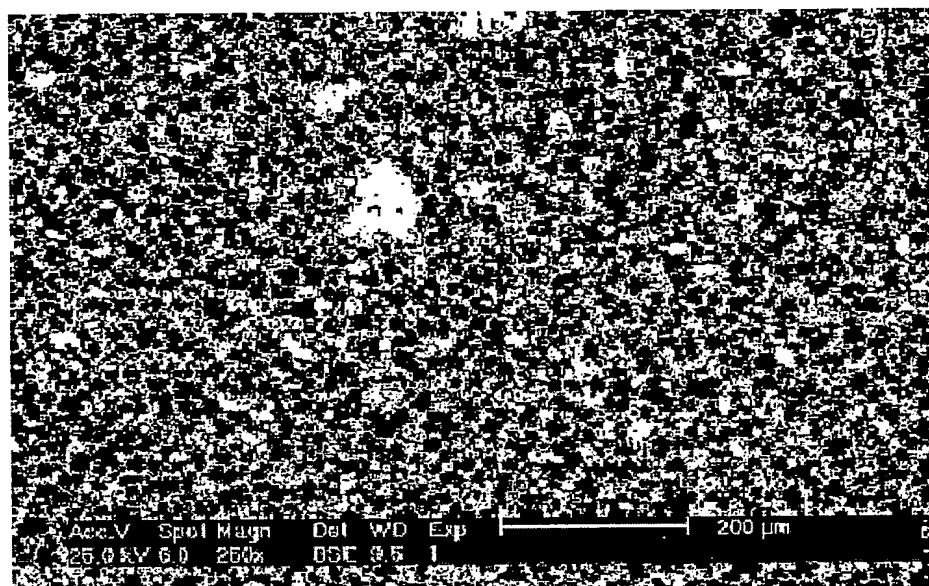
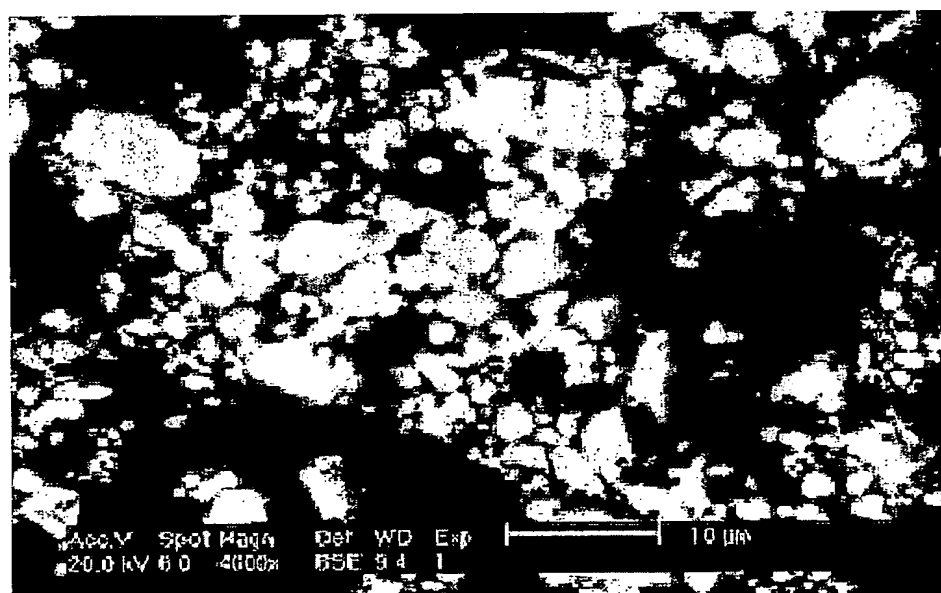


Fig. 9

**Fig. 10****Fig. 11**

**Fig. 12****Fig. 13**

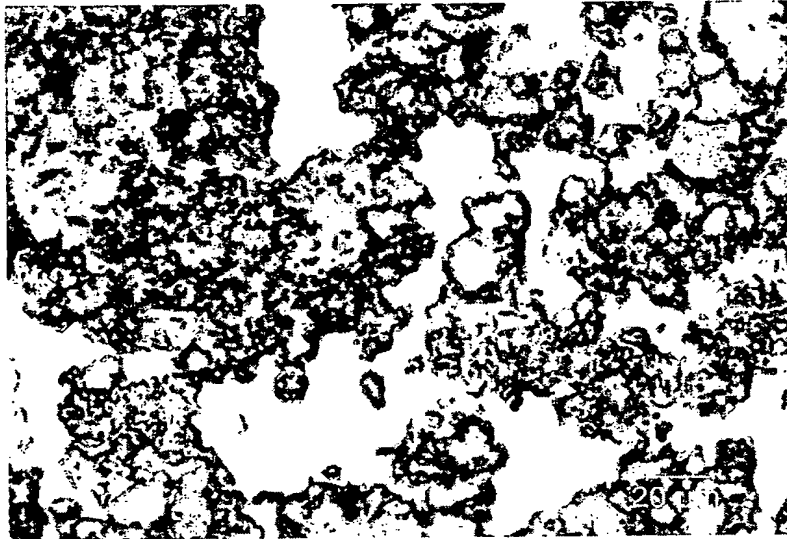


Fig. 14

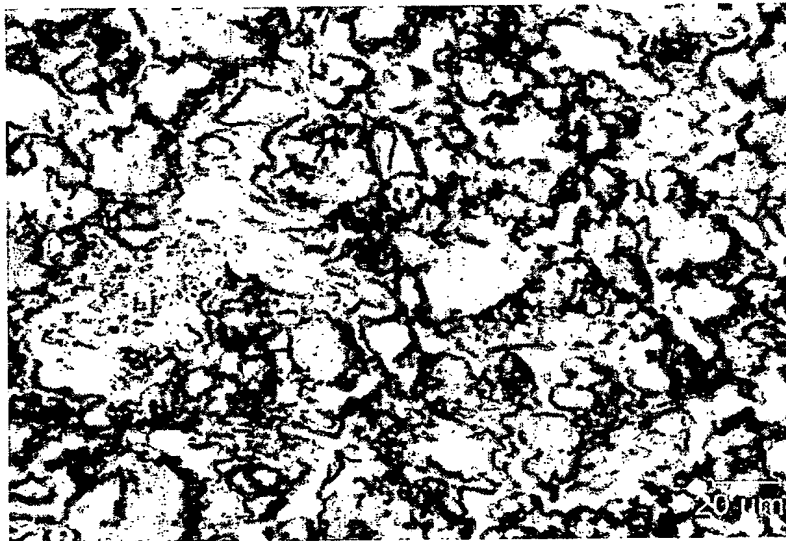


Fig. 15

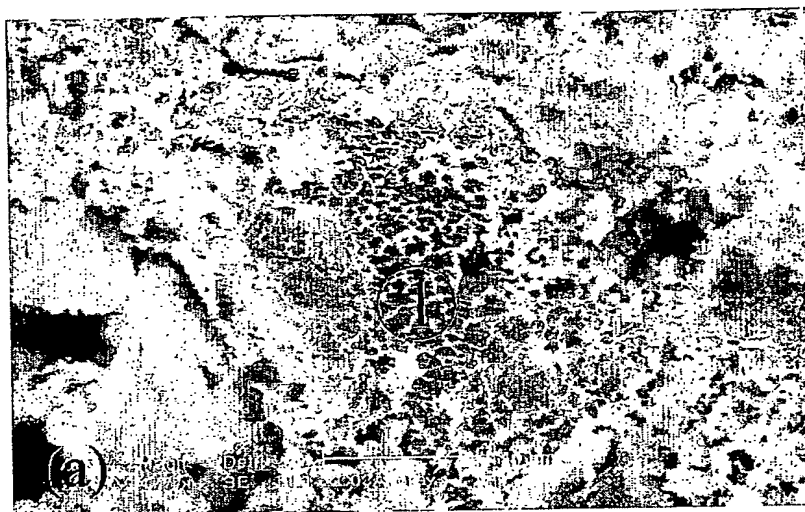


Fig 16

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